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# Promoting a community-based solid-waste management initiative in local government: Yala municipality, Thailand

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## Abstract

Yala is a city of some 80,000 people in southern Thailand, and is well known for tidiness and clean conditions. However, it has experienced problems in waste disposal and has sought ways of addressing these through alternative techniques, including recycling. A package of new practices was introduced, one of which (“Garbage for Eggs”) is described here. Residents were encouraged to bring recyclable material to exchange for eggs, at monthly exchanges in local communities, with emphasis on poorer communities. The project aimed not only at garbage reduction, but also at community empowerment through self-reliance, establishing new relationships of more equality and less dependence, between poor communities and the municipal administration. The project succeeded initially in promoting clearance of a backlog of discarded items, especially glass, thus improving the environment of the communities; but the quantities brought for exchange then reduced steadily over a year of monitoring, to much lower levels. Various factors accounting for this are discussed, and the impacts of the exchange practice on other poor groups, such as waste-buyers, are analyzed.

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*Keywords:* Community-based solid-waste management; Waste recycling; Community learning; Community empowerment

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## 1. Introduction

Urban areas in Asia produced about 760,000 ton of municipal solid waste per day in 1998 and this is estimated to rise to 1.8 million ton per day in 2025. Local governments in Asia spent about US\$25 billion per year for managing this waste in 1998, and this is expected to be doubled in 2025

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(Bartone, 2000). Most of the financial resources are used for collection and transportation. Smaller portions are used for waste disposal methods, such as composting, landfill and (in fewer cases) incinerating methods (UNEP/IETC, 1996). Very little of the financial resources is spent for solving problems at source, for reducing waste and/or for increasing the level of material recovery, instead of using end-of-pipe methods.

In Thailand, the quantity of waste in 1998 exceeded 37,250 ton per day or 13.6 million ton per year (MOSTE, 1999). Urban communities generated 59% of the total. Only 60–80% of urban residences are served for solid-waste collection and disposal. Solid-waste management in Thailand is mandated to local government.

Some local factors may make the problems of solid-waste management more difficult to solve in Thailand. These can be classified as professional, cultural, and economic factors. In the professional category, questions have been raised about the quantity and quality of the municipal professional staff (Kokphol, 1998).

Several cultural factors may contribute to the problem. These include the persistence of a semi-caste system that the 'socio-economically poor' people have to do low-pay, low-prestige jobs, such as waste collection, transportation and informal gathering and sales of recyclables. Waste disposal, at the household level, is often left to servants and maids (who may be treated rudely by their masters). Their maids are normally assigned to do those cleaning tasks. Furthermore, there is a tendency that the children from well-off families are not properly educated on cleanliness and tidiness of their housing environment. Some of them may even believe that 'their littering practice is the right thing, in that it offers employment for someone else' (Mongkolnchaiarunya, 1999), and this leads to lack of respect for informal rules of socially responsible behavior.

People mostly do not separate wastes at home since there is no awareness, knowledge, facilities, nor incentives to do so. In addition, the Thai way of life, especially with regard to food, tends to produce large amounts of waste, such as numerous plastic bags for carrying cooked and fresh food from markets. Separation of kitchen wastes is not easy. The public's knowledge on hazardous waste is minimal.

Among economic factors that may contribute to current problems of solid-waste management in Thailand is the rapid economic growth that occurred through most of the 1980s and 1990s. This caused a great increase of personal incomes and personal consumption. Consequently, there is now much more discarded material, while for the same reasons there is less incentive to recover, repair or reuse items discarded after use. The economic growth period has also promoted rapid urbanization, and newcomers to a municipality may perhaps feel less sense of community and therefore less social motivation in matters of waste disposal.

Urbanization has also increased organic waste problems, and has had aesthetic impacts. In the rural environment food wastes may be composted or may to some extent be left to degrade or be consumed naturally, but this is not the case in cities (Soopamethaporn, 1994).

Thai people are used to receiving services from local government, especially solid-waste management, almost free of charge, and generally ignore their own roles in improving the situation themselves. The Thai attitude to the municipality is often that it must perform all public tasks. Some people may behave responsibly in paying service fees, but most do not; so they are not in a position to demand quality services. This inevitably leads to questions of management efficiency, cost recovery and accountability.

Recycling initiatives that aim to promote community involvement have been reported from several Asian countries in recent years. Success levels vary. The following are brief details of some such initiatives.

The roles of national government, local government, and private as well as community sectors in recycling business vary. In Ho Chi Minh City, Vietnam, about 5000 women received loan from and sold recyclables to waste shopkeepers (Mehra et al., 1996). The Malaysian and Singaporean governments subsidized their recycling projects heavily. A system of door-to-door purchasing of recyclables was introduced in Malaysia in 1993, but local authorities did not have sufficient knowledge and skills related to recycling so the success was far below expectation (Noor, 1997). Similarly, the Waste Minimization Department of Singapore established 1255 “in-house” waste recycling centers in hotels, schools, offices, factories and residential buildings. The result was not impressive as most people joined in excitement only once and the idea died down soon (Seik, 1997).

The resource recovery program of Metro Manila, Philippines, introduced by 17 city and town Mayors in the early 1990s, was more fascinating. Seventeen environmental cooperatives, of which 890 junk shop owners were members, were established. The cooperatives hired 1500 junk collectors to buy recyclables from residents. Exnora, an international NGO formed in Madras, India, has introduced an idea of selecting “street beautifier” to collect solid-waste items from individual households and leave them in government containers. Each household paid 10–25 Rupees per month as salary for the street beautifier, maintenance of tricycle and other collection materials. There were about 900 Civic Exnora, each of them comprising 75 to 100 families ([www.hsd.ait.ac.th/bestprac/blist.htm](http://www.hsd.ait.ac.th/bestprac/blist.htm)). Wisnu Foundation, founded in 1993 in Bali, Indonesia helped one private haulier to establish a material recovery facility and handled waste from 10 hotels. Recyclables were sold to waste dealers, food waste was sold to pig raisers and compost produced was sold to the 10 participating hotels (Tang, 2000).

## **2. Research issues and site selection**

The principal issue being studied is whether participation of the people in an urban area can be mobilized to solve municipal solid-waste problems. The study aimed to find out if alternative solid-waste solutions can be introduced into local government practices, in contrast to the traditional engineering methods. The study also aimed to estimate the potential impact and sustainability of these community-based alternative practices.

This action research was conducted in the context of technical collaboration between the Yala Municipal Administration (YMA) and the Canadian Universities Consortium’s Urban Environmental Management Project (CUC UEM), which is attached to the Asian Institute of Technology (AIT) near Bangkok. The author was one of the change agents who implemented this project on CUC UEM’s behalf.

The project duration was from December 1999 to September 2001. Field data collection was done from January 2000 to October 2001, through participatory observations, relevant records of the community and the municipality, focus group discussions and interviews with key informants for each topic, e.g. officers in charge, deputy Mayors, municipal department directors, community development committees and reporters.

The project's ultimate goal was to strengthen capacity-building and introduce the concepts of participation, community-based development, effective management and good governance into the local government. The alternative solid-waste projects were discussed and jointly selected by the municipality's Public Health and Environmental Bureau (PHEB). "Alternative" solution in this context means solutions (or projects) that could be implemented by local people, managerially and technically, which implies empowerment, participation and resource mobilization from various sources.

The selected alternative solid-waste management (ASWM) package consisted of four components; the community-based recycling project or 'Garbage for Eggs' (GFE), the municipality-based organic waste fermentation project or 'Bio-extract Production' (BEP), the school waste bank (SWB), and the multi-stakeholders' material recovery facility (MRF) project (Mongkolnchaiarunya, 2003). This paper focuses on the GFE project.

The word "community" here refers to a sub-unit within the municipality, where people have organized themselves and have been officially recognized as an entity by the municipality. Initially, most of these communities were established in the poorer parts of Yala city, but more recently they have been formed also in middle-class residential estates.

The pilot area initially selected for implementing the GFE was Talad Kao, one of six communities at the time the project started (there were 14 communities in June 2001). The criteria used in selecting the community were poverty, responsiveness by community leaders, and environmental degradation. There are 290 households living in this community and most of them earn their living as wage laborers. More than 80% of community residents are Muslims.

Two months after the inception of the project at Talad Kao, GFE was extended to two other communities, Thonwithee and Waeruwan, and also to the city-center commercial district. The two additional communities had some similar socio-economic characteristics to Talad Kao, but the commercial district was quite different since most of the participants were from commercial and governmental sectors.

### **3. Project/research activities**

To launch the ASWM project in Yala, a number of human resource development activities were implemented. The main interventions were two study tours, two training courses (Fig. 1), and advice provision over time.

The first study tour, 25 February–3 March 2000, allowed 25 staff from relevant divisions of YMA and some selected community representatives to see different solutions to solid waste. This group was exposed to GFE operation, recycling business, bio-extract production and utilization implemented by communities, municipal administrations and a private firm in Bangkok, Phitsanuloke, Lampoon, Nakhon Pathom and Prachuabkirikhan provinces.

The second study tour, 2–7 September 2000, provided the same team the chance to learn about the community-based material recovery facility and community saving clubs (in Bangkok), school waste bank, the modified GFE, and organic waste fermentation project (at Rayong municipality), and roles of the municipal urban environmental committee and landfill management (at Nakhon Pathom municipality).

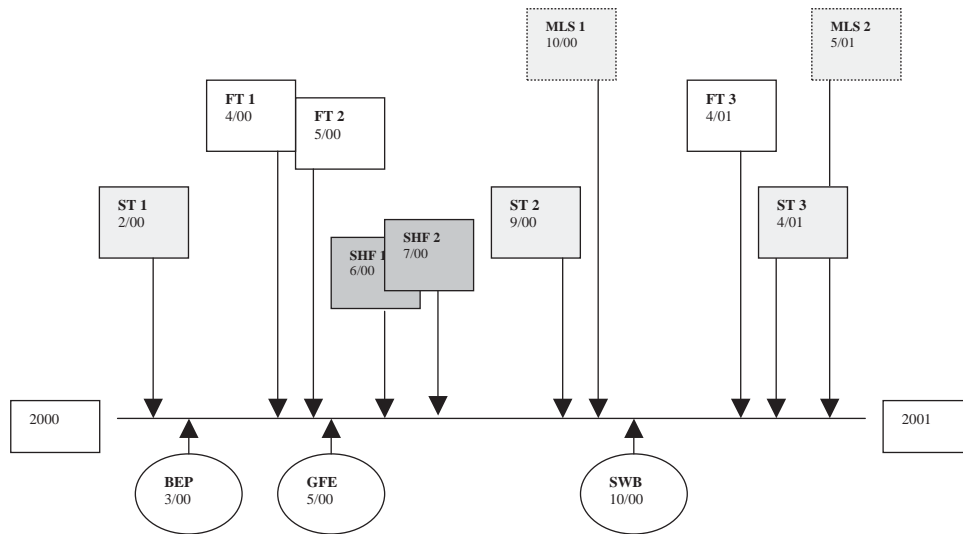


Fig. 1. HRD package for ASWM at Yala municipality. Abbreviations: ST: study tour; FT: formal training course; SHF: stakeholders' forum; MLS: workshop in Malaysia; BEP: bio-extracts production project; GFE: garbage for eggs project; SWB: school waste bank project. *Note:* The workshops in Malaysia, the second stakeholders' forum and the third study tour and third training were meant for all components of the ASWM package, including the GFE.

At the end of each trip, a final seminar was conducted. All members were asked to spell out what they had heard, seen and learned. When the group had reached common understandings or answers, they were asked to work out ideas that could be applied back home.

Two training programs were organized. One intensive course on integrated solid-waste management, 26–28 April 2000, was organized for 16 inter-divisional staff. This course provided a basic knowledge on development concepts, solid-waste problems and solutions. Then participants were assigned to draft a strategic solid-waste management plan for Yala city. As a result, the participants gained insights into alternative solutions, ways to improve efficiency in the existing system, participation concepts, and their roles. Resource persons were drawn from CUC UEM, AIT and the Southern regional environmental office.

Another course was organized for community residents on how to run GFE. The resource persons were the GFE prime movers from Bangkok. The training program consisted of the general introduction of GFE and environmental preservation for residents, including skill training for the seven committee members who would serve as GFE project officers. A few residents were asked to bring their recyclables for exchange and the community committee rehearsed how to do their jobs after the trainers had given demonstrations. The trainers also assisted the community committee to operate the first GFE in the city on the following day.

Before launching the GFE, the municipality organized campaigns about GFE in local radio and television programs. The local mass media paid high attention, as the activity was new to them and was creative. The municipality therefore did not have to pay costs for this broadcasting.

After a few GFE transactions, national television programs and newspapers publicized the project and attracted the interest of local and external people. As a result, many municipalities from Thailand and Malaysia visited Yala city. YMA was also invited to disseminate its SWM

strategy and experiences in the national technical conference among Malaysian administrators of municipalities and cities in October 2000.

The multi-stakeholders' forum was another mechanism that aroused the interest of the people on municipal affairs, including GFE. Representatives of public, private and people's sectors, as well as civic groups, were invited to reflect their needs and ideas on municipal performance.

In addition, the author and CUC UEM tried to promote changes in organizational procedures and policy framework, to favor a sound and sustainable environment, community empowerment and stakeholders' participation through meetings and field supervision.

#### **4. The Yala city and its solid-waste management system**

Yala city is the capital of Yala province in the southern part of Thailand, bordering Malaysia. The city's population was 76,239 persons (excluding seasonal employment seekers and most college students), in an area of 19 km<sup>2</sup> (YMA, 2000). About 32% of the population in the city are Muslims, 67% Buddhist and the other 1% belong to other religions. The Muslim, the Chinese and Southern Thai groups live together without racial or religious conflicts.

The city serves as the center of education for the lower Southern provinces. There are 14 primary schools, seven secondary schools and six higher education institutes as well as a number of regional and provincial agencies in the city.

The city's economy is dominated by its commercial and service sectors. Other economic sectors are transportation, communication and construction. The average per capita income of Yala city was 60,000 Baht<sup>1</sup> per year (Yala Technical and Planning Division, 2000).

The quantity of waste generated daily in the city was 80 ton. The municipal government was well equipped with a troop of 20 waste-collection crews and 218 street and public space sweepers and 20 trucks operating daily, mainly on a door-to-door basis (N.S. Consultant, 1998). The residents were neither invited to participate nor informed of the city's solid-waste situation or its costs. The recyclables separated from the waste stream amounted to 3% of the total waste generated. Although there was no data, it was assumed that collection efficiency was higher than 90%, because it could be observed that Yala city was cleaner than Bangkok, whose collection efficiency was 85% (BMA, 1999). Yala city has three times won the prize for "cleanliness and orderliness" in the annual national competition among municipalities.

However, the efficiency of resource use was not so high. Compared with other cities, e.g. Rayong, Phitsanuloke, Lampoon, and Nakhon Pathom municipalities, YMA spent more resources (labor, truck and petrol) per ton of waste (CUC UEM, 2000).

Collected municipal solid waste (including hazardous waste) (Table 1) was taken to a dumpsite outside the municipality and covered by soil dug from the dumpsite area. From time to time, the only old bulldozer was out of order so waste was left on the open space. Since the dumpsite was not fenced properly, a few waste pickers and some cows invaded it. Stacks of tree and branch refuse were burnt in the open space belonging to the dumpsite. This inevitably created bad odor, air and soil pollution and negative esthetic effect. Hospital waste was disposed of in a small incinerator located in the dumpsite area. Planning for a new landfill site was under way, but it had not yet materialized due to shortage of funds.

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<sup>1</sup> 39–45.5 Baht = US\$1 during the time of research.

Table 1  
Composition of solid waste in Yala city, 1998

Type of waste	Proportion of total (%)
Kitchen and food waste	49.3
Rubber and plastics	19.9
Textiles and paper	14.5
Glass	10.8
Wood	5.1
Ferrous metal	0.4

Source: N.S. Consultants, 1998.

Like most municipalities in Thailand, the YMA provides waste collection and disposal services but charges low fees. While YMA spent 37 million Baht, its annual income from waste service fee was only 0.7 million Baht (YMA, 1999). The service fee was only 5 Baht per household per month<sup>2</sup> and fee-collection efficiency was 37.7%. Collection of fees was done door-to-door by collectors from the municipality's finance department, and the amount collected did not contribute directly to the PHEB budget. The cost recovery level was below 2%.

In the past, these issues did not affect the municipality much, as municipal finance was substantially under the control of the central government. In recent years that has changed under the national policy of decentralization. Central subsidies to municipalities are now being reduced or withdrawn, and Yala municipality therefore finds itself now facing the need to make services such as waste collection and disposal more efficient, and to recover their costs. This in turn leads to a need to make these services more satisfactory to the residents.

## 5. What is GFE?

The GFE is a recycling project that mobilizes residents' cooperation in separating waste and bringing valued recyclables to exchange points. Residents receive eggs in exchange for their recyclable waste.

The GFE concept originated in 1997 in a physically upgraded slum area of Bangkok called '*Choom Chon Pattana 70 Rai*', located nearby Klong Toey port. The community is Buddhist and accommodates mostly poor people. At that time the community had tried to solve its flooding problem, which was caused by garbage blocking the drainage canals. The community development committee decided to fight against the littering habit by involving residents in managing their solid-waste problem.

The GFE then was created under principles of self-management, fun, and multi-purpose objectives. Financial assistance was drawn from various NGOs and a government economic crisis rescue fund. The team members from the original community work now not only for their own community, but they also advocate and propagate the scheme for other places, for instance other districts of Bangkok, the municipalities of Rayong, Phuket, Ratchaburi, and others including Yala (Pathumthong, 2000).

<sup>2</sup>Commercial and industrial premises are charged at rates which vary and are substantially higher.



The amount of eggs given depended not only on the weight and types of recyclables (economic objectives), but also on the quality of waste separated, the characteristics of the participants, especially as to whether they belonged to neglected groups, and the level of community participation (environmental and social objectives).

This procedure, in which the number of eggs given depended not only on the quantity of recyclable goods that were offered for exchange, but on some other criteria as well, was not generally followed in other municipalities. In Rayong, for example, members of the Fire Brigade operated a GFE program, but used a fixed “exchange rate” principle (interview, Rayong GFE team leader, 3 September 2000).

## 6. Findings

GFE operated from May 2000. By the end of June 2001, there had been 43 exchanges, at five sites, collecting 66.8 ton of recyclables from 4251 individuals living in Yala jurisdiction. The total number of eggs given in exchange was 49,380. On average, each egg was exchanged for 1.35 kg of recyclables.

The composition of recyclables collected is shown in Table 2. A downward trend of recyclables collected through GFE was observed as shown in Fig. 2.

Glass bottles constituted the biggest share since this item was not wanted by any itinerant buyers or junk shops due to zero demand from recycling factories. Residents had to dispose of glass bottles through the GFE scheme. The municipality had to stock those glass bottles in the store next to the dumpsite. The bottles would be sold when the price of glass increased or would be ground down and buried.

Operations at all exchange points, except at Talad Kao, were largely handled by the PHEB staff and laborers. Two leaders from Talad Kao assisted in those operations. The PHEB staff purchased eggs for the operation, performed bookkeeping, and sold recyclables to junk shops. Income was paid back to the municipal account.

Since the Talad Kao committee showed its capacity in handling GFE independently, the PHEB provided 5000 Baht in early 2001 for establishing a community revolving fund for running GFE. In June 2001, the revolving fund amounted to 5783 Baht, since there had been some gains from the sales. This was the first time that the municipality established a revolving fund and let it be controlled by the local community. Previous community development funds in Yala city were

Table 2  
Composition of recyclable solid waste exchanged for eggs during the project

Category of recyclable waste	Percentage of total exchanges
Glass	76.5
Paper	13.6
Plastic	7.1
Metal	2.5
Other	0.3

Source: PHEB, 2001.



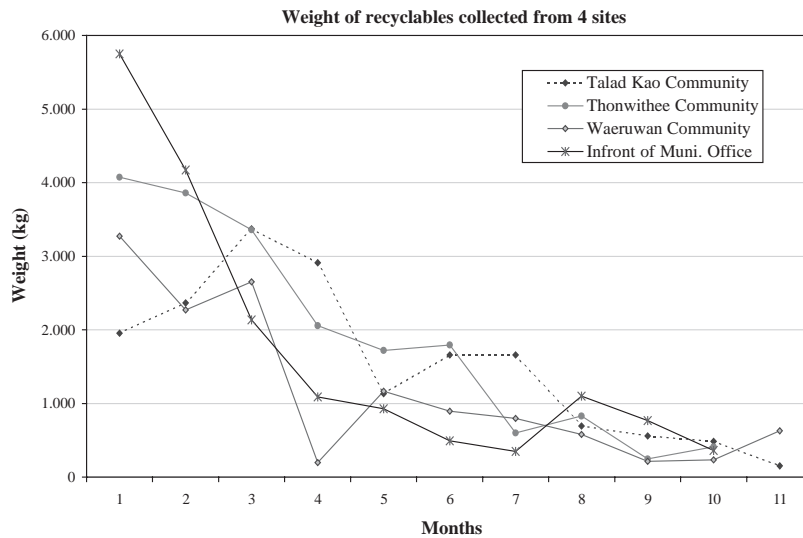


Fig. 2. The total weight of recyclables collected from the four sites. Source: PHEB, 2001.

managed by or closely supervised by municipal staff, due to lack of trust and confidence in a community's capacity. The committee of Waeruwan community started to manage their own GFE independently in June 2001 and would be granted another community revolving fund when PHEB is convinced of their capacity and willingness to take full responsibility for operating its community's GFE.

Among GFE beneficiaries, the community residents receive most benefits, especially those in Talad Kao. Environmental conditions in the pilot community have changed dramatically. The community sanitation condition is improved and clean, since almost all recyclables and other waste were removed from water-logged spaces. Residents also earn eggs from recyclables exchange. The community leaders receive recognition from the municipal authority since their performance creates a national reputation for Yala municipality. When they deal with municipal units either on private or community business they are treated in a respectful manner, not like objects belonging to the bureaucratic system. The municipal government also earns nation-wide reputation from this project. The degree of willingness to pay the waste-collection fee has been raised as well, resulting in higher income from this source. The collection fee efficiency increased gradually from 37.7% in 1999 to 54.1% and 58.6% in 2000 and 2001, respectively (Finance Bureau, 2001).

Not everyone is a winner. Among those who lost due to the project are 45 members of municipal collection crews, who separate recyclables during the collection and transportation stages, for subsequent sale. They complain of income reduction from an average of 100 Baht per person per day to about 40 Baht, since the project began. The 20 waste pickers at the dumpsite also complained of income reduction. But among 10–15 itinerant buyers and 30 street waste pickers there was no consensus whether they earned less or more. It appeared to depend on the industriousness and marketing strategy of each individual. The numbers of itinerant buyers and

street waste pickers have increased by 40–50% (PHEB, 2001) due to the national economic crisis and more positive attitudes towards waste.

Municipal policy makers become convinced of the advantages of community participation and empowerment. Formerly, policy towards legalization of community status was weakened because the municipal authority did not see the benefits, and worried that irresponsible demands would be made by those community committees. The municipality's new policy is to grant official status to as many communities as possible, and it welcomes them to forward their needs, budget proposals, and feedback to the concerned divisions directly. However, these administrators did not have time and capability to oversee and control the day-to-day municipal operations. The jobs are mainly left to the municipal unit directors and other officials with strong personalities, and changes depend on the ability and desire of these people.

There was a staff reshuffle in YMA, including the director and some key staff of the PHEB in October 2000. This change influenced the application of ASWM and its success remarkably. After October 2000 it was found that the motivation of PHEB staff in charge for GFE (and other ASWM components) was declining due to lack of interest of supervisors and new management style in the department. Staff that were not in favor for ASWM have been promoted and there were new rules that indirectly obstructed the implementation of GFE. Consultation with CUC UEM became rare after the staff reshuffle and human resource development activities for ASWM implementation were not emphasized.

## **7. Discussion**

The downward trend of the recyclables collected from each participating site, as shown in Fig. 2, can be explained. Initially, the quantity of recyclables collected was enhanced by the gathering of a backlog of materials that had been discarded previously around the communities. When that had been removed the routine amount of recyclables generated could be observed. Another possible reason for the decline in GFE collections might be the increase of itinerant buyers who regularly visit most of the houses. These people are now conditioned to buy recyclables at a higher price than in the past; if they do not, they might not get any materials.

Following the principle of changing 'trash to treasure', the egg is used as an exceptional means for mobilizing public participation in waste separation and recycling. In this play, egg provides at least three advantages; economic, nutritional and social benefits.

Eggs provide a big profit margin for the GFE project, since eggs are bought from a wholesale enterprise, at wholesale price. Residents calculate what they receive at retail market price, which makes the eggs seem more valuable for them. Generally, the price difference was about 50–100% (YMA, 2000). This makes GFE more attractive, and feasible to operate in a cost-recovery manner. Nutritionally, eggs are a valuable and favorable Thai food that can be cooked in many different varieties.

The social reason is also important. Better-off people and bureaucrats may not want to separate recyclables for money, though it is desirable, because they do not want to lose face if the neighbors recognize this practice. But to exchange them for eggs (hygienic products), under a municipally supported environmental development scheme, many residents are more willing to cooperate than not.

In some other cases, flower plants and canned food were chosen as the exchange means. However, it was not so successful since poor people wanted money or food, as there is a saying that ‘stomach is more important than eye’ (Mongkolnchaiarunya, 1999). On the other hand, a can of preserved food was 3–5 times more expensive than an egg so it was not feasible to exchange it for a small amount of recyclables.

With regard to environmental benefits, it is unquestionable that the community’s cleanliness and the expansion of the dumpsite life cycle are worthwhile. It was found that the GFE satisfied physical needs and helped to increase cohesiveness among residents in the pilot community. It also strengthened the capacity and confidence of the community leaders as well as building up a close relationship between the community and the municipality. Political figures are happy about the residents’ satisfaction and about reputation gained from this initiative.

Most importantly, GFE can be a good mechanism for achieving a new role model for municipal agencies, business enterprises, civic groups and residents. The triangle relationship, among public, private and community sectors, must be established in an equitable manner. This new relationship will lead to efficiency and good governance in the future.

Small conflicts are naturally raised from a GFE operation. However, since the waste pickers, itinerant buyers and collection crews are few in numbers and have little bargaining power, they do not make a viable opposition. Nevertheless, this issue should not be overlooked. In this case, there was a plan to employ those in the informal sector to work in the proposed new material recovery facility. Unfortunately, the plan was not realized due to management changes.

Up to now, the operation of GFE is technically, physically and financially subsidized in many ways by the municipal government. The area of operations and the population participation are less than 10% of the whole municipality. So it cannot be concluded that it can substitute for the traditional solid-waste management system or is economically viable. But compared with other traditional waste management projects, GFE is far less expensive, as it requires only training, supervision, study tours and transportation subsidies. In addition, the PHEB’s core team and elected administrators perceive that the budget spent is cost-effective as most of the costs incurred from GFE would probably have been spent anyway.

Another interesting financing phenomenon was the increase of waste-collection fees during the past 3 years, without major changes in the fee-collection system. Although there was no proof that GFE operation was related to this achievement, it could be one of the indirect factors which contributed to the understanding of the residents about the city environment and the trust in municipal endeavor to overcome city problems. All these may create higher willingness to pay for it. This issue needs to be further studied.

GFE in Yala may not be sustained. It was originally planned to be an environmental, social and economic development tool. To achieve these objectives, the GFE officers must educate the participating residents on a consistent basis. The public must be sensitized and stimulated to join, not only as the ‘customers’ but also the ‘officers’ of the scheme. Mass media should be utilized regularly. Step by step, the community should expand its responsibility to handle more solid-waste activities and/or other self-help projects. But many things did not happen as anticipated. Educational and empowerment issues have not been sufficiently emphasized, while very little participation from the communities, civic groups and from other municipal staff could be attained. Regular and systematic human resource development plans, both for the staff and for community leaders, were not established.

The GFE officers (community leaders) and the municipal staff-members who serve as advisors, supervisors and supporters need further capacity-building in various fields, e.g. business management, mobilization of public participation, environmental development and sustainable development concepts, and others. The administrators and supervisors do not see the needs, nor are they able to organize such training for the staff and community leaders.

Structurally, there are very few municipal staff that have educational backgrounds in community development or related fields. There is only one community development position and one social worker position in the Social Welfare Division (SWD). The community development worker has been transferred, for a higher professional classification, to another municipality since July 2000 and has not been replaced for a year. The personnel management system is complicated and beyond the authority of the Mayor. To transfer a municipal official requires approval from both sides; the present authority (the Mayor and the provincial board in charge for municipal personnel management) and the other authority that accepts this to-be-transferred person. Moreover, coordination and cooperation between SWD and PHEB was not efficient. Each division/department has its own empire and strategy to do its jobs. Most importantly, the municipal systems must be revised to support the new role of the community as development partners, not as the recipients of municipal services.

In this light there is a need for an external capable partner, who can strengthen and hasten the development processes in the municipal administration and the community.

## **8. Conclusions**

The case study seems to illustrate that the fewer the financial resources devoted to the solid-waste management project, the more effective it is. Incinerators and landfills are very expensive and there are few successful examples in less developed countries. GFE provides not only economic benefits but also achieves social and hygienic benefits. Local perception about loss of face derived from sales of recyclables is overcome by the exchange of eggs instead of money. As some recyclables are taken out from the waste stream, the life of a dumpsite can be extended.

The experience in Yala city shows that GFE can be utilized for cleaning a community in a short period of time. The scheme also provides an opportunity for the community to participate in the wider solid-waste management process.

GFE appears to be more appropriate in poor areas. People in these areas probably discard much less recyclable material than in the better-off and commercial districts, but on the other hand they are more likely to be motivated by getting something in exchange.

Since GFE is developed from local initiatives, the people themselves can take part and can be proud of their achievements. This is crucial for community participation, empowerment and development. There is strong evidence that, when the capacity and bargaining power of the local community have been increased, the dependency relationship to the local government and/or bureaucrats can be reduced. The local authority has to pay more attention to the needs and ideas of the people. This, in turn, can initiate an era of people's participation in solid-waste management.

As of October 2001, the sustainability of GFE in Yala was uncertain since the community was still in an infant stage of self-reliance, and the local staff is not well trained in how to deal with the

community. The municipal development procedures and practices have not been reformed to accommodate participation and self-reliance in a sound and systematic way. PHEB's new management style was also not supportive of the GFE scheme.

GFE should be seen as a learning process, not primarily a device for environmental development or an alternative to the traditional solid-waste management system. This participatory problem-solving and empowerment process can bring about gradual cultural, educational, economic, environmental and political changes towards waste, waste-management activities and towards the people's and the local government's roles, given that an appropriate and consistent policy and implementation is assured.

In the introduction of a practice such as GFE, the role of an external development partner is significant. The external partner can assist both of the primary partners—the municipality and the community—to break down existing patterns of behavior and arrive at a new set of relationships and roles. The external partner should bring in new ideas, knowledge and skills in alternative solid-waste management to the public, private and community sectors as all of these parties must share their responsibilities in one way or another. Their roles must be both harmonized and synchronized. Human resources development, organizational and institutional development must be emphasized and can be ignited and launched more effectively when the external capable partner is involved.

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